

SARCOMA OF THE BLADDER.

REPORT OF A CASE OCCURRING IN A CHILD FOUR YEARS OLD.

BY CYRENUS GARRITT DARLING, M.D.,

OF ANN ARBOR, MICHIGAN,

Clinical Professor of Surgery in the Department of Medicine and Surgery; Lecturer on Oral Pathology and Surgery.

In an article published in 1890, Dr. Vanderveer stated that, after an extended examination of the literature of vesical new growths, he had been able to collect the histories of only twenty-two cases occurring in childhood. "Of the malignant tumors of the bladder, the case of medullary cancer occurring in a child four years old reported by Smythe stands alone as the only instance of primary malignant growth in childhood confirmed by the microscopic examination. Secondary sarcoma from the vagina has been reported three times. Billroth's justly celebrated case of myxosarcoma and carcinoma and another case of fibrosarcoma are the only instances of mixed growth that have been reported."

My patient, a male, four years old, entered the University of Michigan Hospital, July 10, 1902, because of difficult urination. In February, 1902, the urine was first noticed to have a red appearance. This lasted but a short time, but reappeared in April, when it was examined by the attending physician, and found to contain blood. In May the patient began to have difficulty in passing urine, the bladder becoming distended, then emptying itself by spurts. He was catheterized for a time by the attending physician, and then was taken to a hospital in a neighboring town, where, for a presumed spasm of the urethra due to an irritable prepuce, he was circumcised. From that time until he entered the University Hospital he was catheterized twice daily. Upon admission the urine was quite thick with a heavy deposit, which was mostly pus. He could pass urine without a catheter only when the bladder was overfull, and then it caused great pain, passing in spurts.

July 14, 1902, he was anæsthetized with ether and the bladder carefully examined for stone. Examination negative. He was then put in the lithotomy position, a staff was introduced as a guide, and the bladder was opened by a median incision. A rubber tube was inserted for continuous drainage. The bladder was irrigated twice daily through the tube with normal salt solution. The cystitis rapidly subsided, and twenty-six days after the operation the urine was apparently normal and the wound healed. A few days later, the difficulty in passing urine returned, and he grew rapidly worse. A fragment of tissue was passed with the urine, which suggested a growth in the bladder. The pain, discomfort, and loss of sleep were making him very weak, and a second operation was performed on November 3, 1902.

A median perineal incision was made in the old scar, through which a mass could be felt, but it was so large that another incision was made above the pubes to secure a better field for operation. A finger inserted in this opening could be swept around a mass of soft tissue as large as an apple, which was easily broken down. It was everywhere free except at the posterior wall and base of the bladder. The tumor was excised and removed, the entire growth weighing eight ounces. Extreme care was taken to remove all of the growth that could be detected. The free hæmorrhage was readily controlled by gauze compression. The incision in the anterior wall of the bladder was partially closed with two sutures and drainage-tubes were placed in both openings.

The growth, microscopically, presented for the greater part the structure of a myxolipoma, very vascular, and in areas so rich in cells as to have the appearance of sarcoma. Angiomatous areas were also present. The growth was polypoid, the surface being covered with a stratified epithelium which in some areas resembled the epidermis, the outer layers of cells having a distinct horny appearance (Figs. 1 and 2). *Diagnosis.*—Myxoliposarcoma, probably congenital. The bladder was irrigated twice daily with normal salt solution, and recovery progressed so rapidly that the tubes were removed on December 15. Ten days later he left the hospital apparently cured. The trouble appeared again in May, 1903, and he returned to the hospital for an operation, which was performed on June 1. The bladder was opened by a suprapubic incision, and the walls were supported by two strong

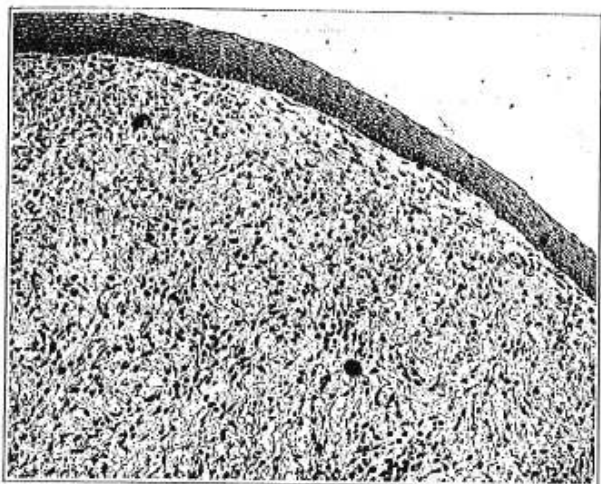


FIG. 1.—Removed at second operation. Area presenting structure of a myxoma covered with stratified flattened cells, the outer ones resembling those of the horny layer. $\times 175$.

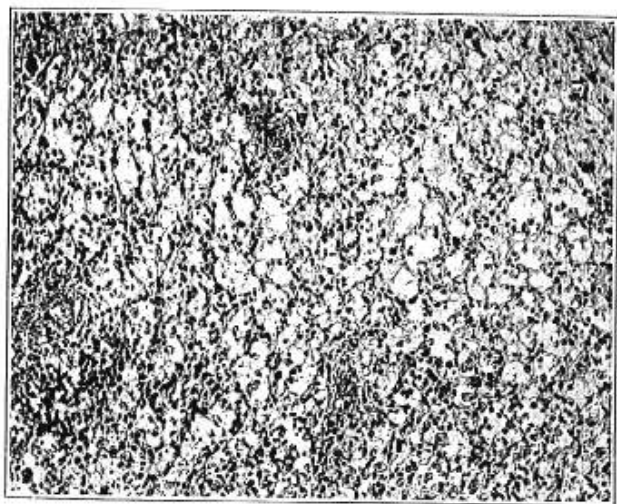


FIG. 2.—Removed at second operation. Structure of lipomyxosarcoma. $\times 175$.

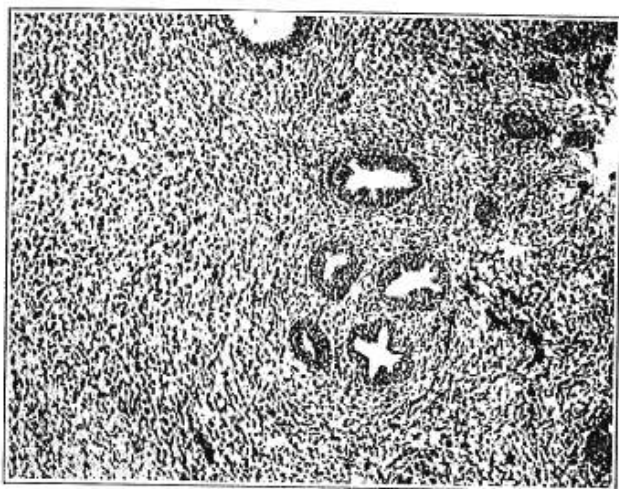


FIG. 3.—Removed at third operation. Gland-like structures in sarcoma of bladder (adenosarcoma). $\times 175$.

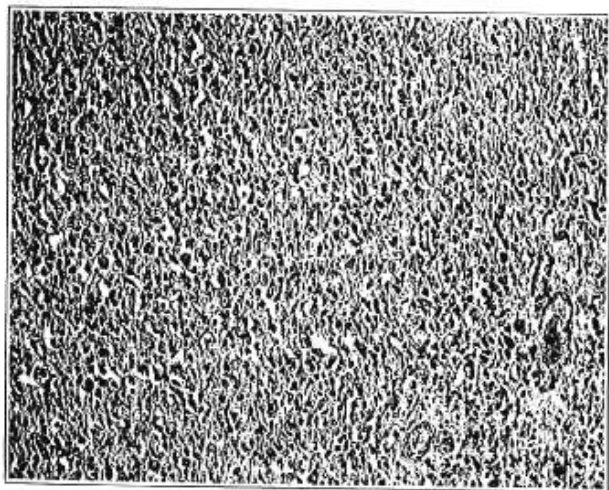


FIG. 4.—Removed at fourth operation. Polymorphous-celled character. $\times 175$.

anchor sutures. The tumor was much firmer to the touch than the one previously removed and nearly filled the bladder.

The point of attachment to the bladder seemed much smaller and more easily defined, occupying the base and extending well up the sides. The growth was broken up with the fingers and the pedicle portion cut away as much as safety would allow with a sharp curette. The severe hæmorrhage was controlled by packing with iodoform gauze; the wound was left open.

Section of this tumor showed a growth of more cellular character than the one removed at the previous operation, the character of the tumor being that of myxosarcoma. Numerous gland-like tubules and spaces are seen throughout the sarcomatous tissue. Some of these are lined with transitional epithelium, others by tall columnar cells. It is evident on serial section that some of these spaces represent blind tubules, while others are continuous with the surface epithelium. The appearances presented by the greater part of the growth are those of adenomyxosarcoma (Fig. 3).

Once more he made a good recovery and left the hospital in July, but returned again on the 22d of August with a history as follows: About two weeks ago he began to pass his hand frequently across the lower part of the abdomen as if in pain, stopping to do this while at play. A week later the urine began to dribble. He was seized with severe spasmodic pain in the bladder, which has continued ever since. The spasms last about fifteen to thirty seconds, coming from one to five times an hour. He draws the knees towards the chin, kicks, cries out, and passes a small amount of urine. He has no control of the bladder; there is either retention or involuntary passage of urine.

The fourth operation was performed August 31, 1903. The bladder was again opened above the pubes, exposing a large pear-shaped growth, the small portion corresponding to the pedicle. The tumor could not be brought up into the wound, so the incision was continued above, opening the peritoneal cavity. The intestines were pushed upward and held in place by a gauze pack, while a hand passed behind the bladder raised it to a more convenient point for operation, and at the same time enabling the operator to guard against penetrating the bladder-wall with the cutting instrument which was used on this occasion. The tumor, firm and smooth, was rapidly cut away with a Fuller's prosta-

tectomy forcep. Every effort was made to remove all of the bladder-wall from which it grew. The patient was in a dangerous condition from the loss of blood at the completion of the operation, and saline solution was employed subcutaneously. The bleeding was controlled by packing with iodoform gauze.

Pathologist's Report.—The growth is more cellular in character than in previous specimens, in parts having the appearance of spindle-celled sarcoma, in others of a polymorphous-celled sarcoma. No gland-like tubules found. In the polymorphous-celled areas there is a distinct reticulum in the spaces of which the cells lie. This reticulum is for the greater part firm, stains red with Van Gieson's, and is myxomatous in character in only a few places. The growth is very vascular. The diagnosis best fitting the greater part of the growth would be that of polymorphous-celled sarcoma (Fig. 4).

The patient remained very weak for days, but finally rallied. The abdominal wound healed without any serious peritonitis, but an abscess formed in the incision just above the bladder, which persisted until death. The tumor returned, enlarging rapidly, and was soon pressing upon the ureters. Signs of general sepsis appeared, the patient gradually sinking. He died November 26, 1903, one year and four months after first entering the hospital.

Autopsy Protocol (Autopsy by Dr. Warthin).—The body was examined a few hours after death. Just above the pubis there is a rounded, somewhat flattened, lobulated mass 8 centimetres long and $6\frac{1}{2}$ centimetres wide, and variegated in color from dark red to yellowish white. On separating the larger lobes, smaller lobules are found beneath them. The surface of the lobes is covered with a sticky fluid. The tissue composing them is semi-elastic. The entire mass presents through an opening in the anterior abdominal wall between the umbilicus and the pubis. On the right side the tumor is entirely free from the edge of the opening and the fingers can be passed beneath the lobes into the peritoneal cavity. On the left the growth is adherent to the edge of the opening in the wall and to the root of the penis below. On passing the hand into the peritoneal cavity upon the right side, the pelvis appears to be filled with lobulated masses continuous with those presenting through the opening in the abdominal wall.

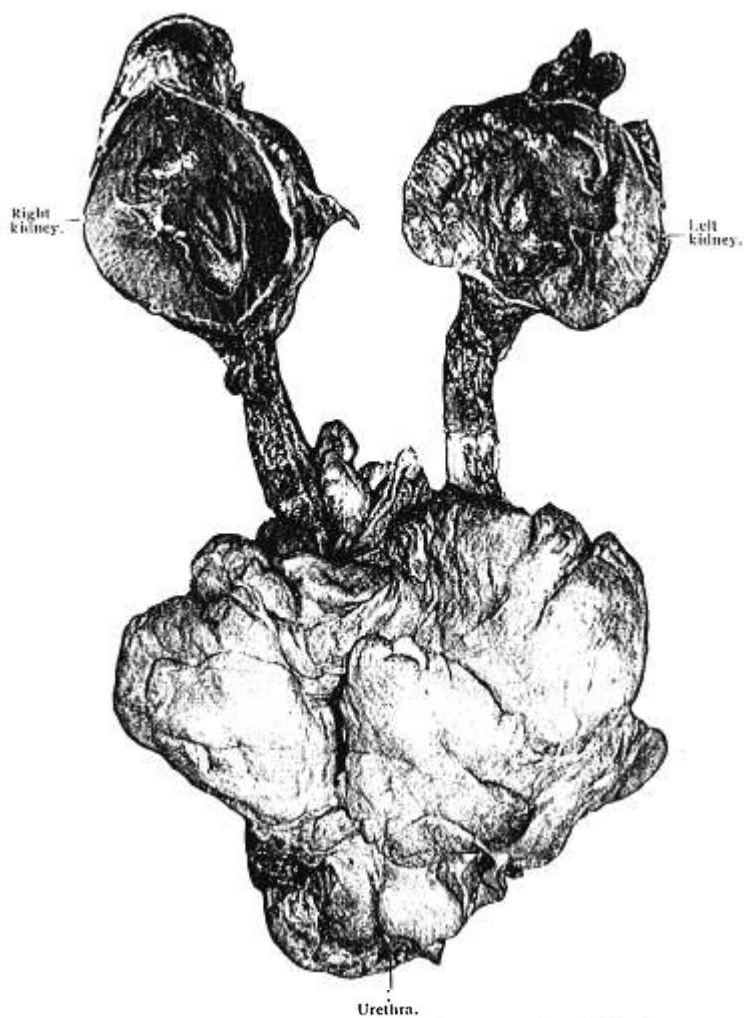


FIG. 5.—Sarcoma of bladder; dilatation of ureters; pyelonephritis.

The large tumor mass in the pelvis is entirely within the bladder, and extends through an opening in the anterior abdominal wall. It is firmly adherent to the pubis, and upon its lower margin and left side to the abdominal wall. The lobulated masses fill the cavity of the enlarged bladder and apparently spring from its fundus and posterior wall.

Adrenals, kidneys, ureters, bladder, and external genitals removed in one piece (Fig. 5). Both adrenals atrophic. The kidneys are very irregular in shape, the pelves being greatly dilated. On section the cortex of both is very atrophic. The labyrinths are enlarged, cloudy, and of a yellowish color. In the cortical portions of both there are small, yellowish, wedge-shaped areas with base towards the surface of the cortex. No metastasis recognizable by the naked eye. The medullary pyramids of both are atrophic and contain yellowish stripes corresponding to the straight tubules. The pelves are enormously dilated and filled with purulent fluid; mucosa thickened and covered with thin pus. In the upper pole of the right kidney there are firm translucent areas suggesting the presence of amyloid. Iodine test not used. Both ureters are greatly dilated, walls thin. At the brim of the pelvis both are pressed upon and constricted by lobules of the tumor which rest upon the pelvic brim. The dilatation is as marked below the points of constriction as above them. The left ureter has a tortuous course and is pushed far to the left at the brim of the pelvis. No extension of the tumor into the ureters can be found, but the openings into the bladder are blocked by the growth arising from and infiltrating the bladder-wall. The bladder is opened anteriorly. Its cavity is almost entirely filled with lobulated polypoid masses springing from the entire posterior wall and base. Here the entire mucosa and submucosa are infiltrated by the growth, the infiltration apparently not extending into the muscularis. The cut surface of the tumor is smooth, moist, and shining, of a whitish color and almost homogeneous. A few of the smaller lobules lying between the larger ones are translucent and jelly-like. The posterior urethra is greatly dilated, small tumor masses extending from the main mass down into the urethra and blocking its lumen. These present on section the same characteristics as the main mass. They are adherent to the posterior wall of the urethra, but not to the anterior. The posterior wall and the prostate show some infiltration. Tes-

ticles atrophic, otherwise negative. The retroperitoneal glands are prominent but not distinctly enlarged. No evidence to the naked eye of metastases. The hamolymph glands cannot be distinguished. The mesenteric glands are slightly enlarged, the largest found in the neighborhood of the appendix. Section negative.

Microscopical Examination.—Material was taken from all the organs and tissues as well as from the tumor and fixed in alcohol, formalin, mercuric chloride, Zenker's, etc. The chief material was embedded in paraffin. The ordinary stains were used, and in addition special methods for mucin, fibrin, etc.

Tumor.—Section presents the appearance of a very cellular spindle-celled sarcoma with small areas of caseation necrosis. The bladder-wall is diffusely infiltrated, the infiltration extending through the muscularis into the surrounding tissues. The striped muscle in the neighborhood of the bladder is also infiltrated. There is also a diffuse infiltration of the wall of the urethra, the epithelium being preserved over the tumor. The more translucent parts of the growth are myxomatous (Figs. 6, 7, and 8).

Kidneys.—Ascending pyelonephritis with multiple abscesses, marked dilatation of pelves and collecting tubules. Areas of chronic interstitial nephritis and amyloid. No metastasis found.

Retroperitoneal Glands.—Atrophic. In one gland a small metastasis about the size of a mustard-seed was found. In structure it resembled in all respects the primary growth in the bladder (Fig. 9).

Pathological Diagnosis.—Congenital sarcoma of bladder (adenosarcoma becoming a simple histoid sarcoma of the spindle-celled variety). Metastasis in retroperitoneal gland. Dilatation of ureters due to obstruction and compression. Ascending pyelonephritis. Chronic interstitial nephritis. Beginning amyloid degeneration. Atrophy and passive congestion of all organs. Fatty degeneration and infiltration of liver. General marasmus.

A classification has been made of all reported cases of sarcoma of the bladder that I have been able to find and verify. There are eighteen cases including my own. It will be seen that the true condition of some of these was not discovered before postmortem. Of the eight cases operated only

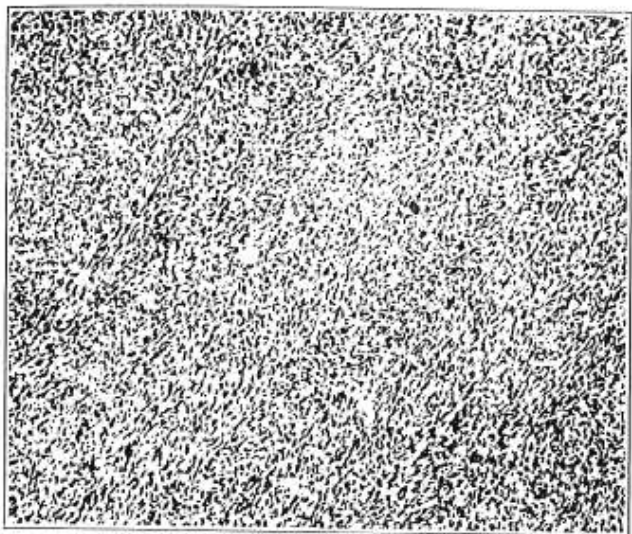


FIG. 6.—Removed at autopsy. Primary spindle-cell sarcoma of bladder. $\times 150$.

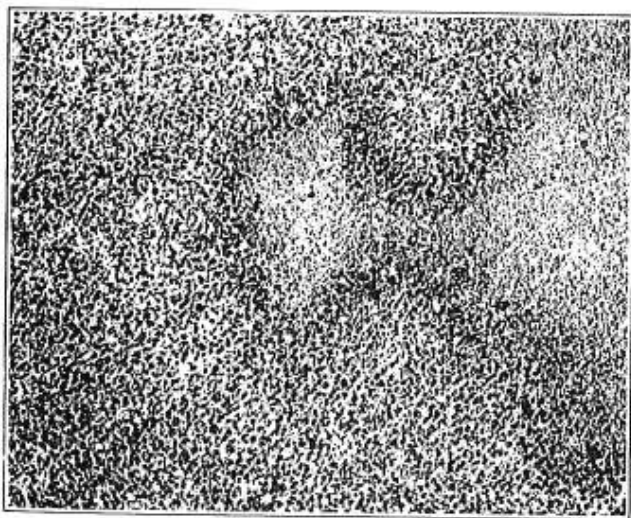


FIG. 7.—Removed at autopsy. Necrotic areas in primary sarcoma of bladder. $\times 175$.



FIG. 8.—Infiltration of bladder-wall by tumor. $\times 175$.

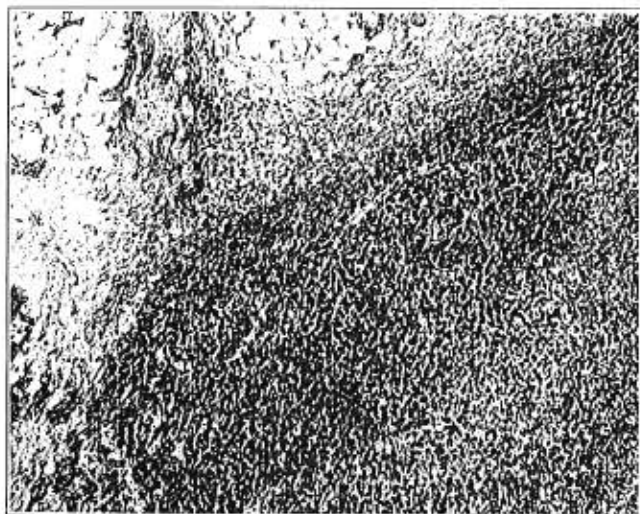


FIG. 9.—Metastasis in retroperitoneal lymph-gland. Small sarcomatous nodule just beneath the thickened capsule of the gland. $\times 175$.

one lived (Gussenbauer). Three of the operated cases were females, and the operation consisted in removing only that part of the growth which could be reached by the urethra. The operation in one male consisted in opening the bladder for drainage. Two were operated by combined suprapubic and perineal incisions.

The result so far obtained by operation would indicate that the only hope of success in these rare cases lies in the entire removal of the bladder.

ABSTRACT OF CASES FROM LITERATURE.

I. GUERSANT.—A female, one year and ten months old. A portion of the tumor was removed through the urethra. Death seventeen days after operation.

II. GUSSENBAUER.—Male, twelve years old. The tumor was removed by combined suprapubic and perineal incision. The wounds were entirely healed at the end of four weeks.

III.—SEIWART.—Female, three years old. The tumor was removed three times, but rapidly returned, causing death.

IV. BUTLIN.—Female, four years old. Removed many times by the urethra. Patient died.

V. FENWICK.—Male, eight years old. Operated twice by perineal incision and died six months after the last operation.

VI. MORGAN.—Male, eight years old. The operation in this case consisted in opening the bladder for drainage. The patient died four days later.

VII. CHAFFEY.—Male, one year and eight months old. Operated by perineal incision. The patient died ten days after operation.

VIII. CHIARI.—Male, five years old. There was no operation. The patient died from hæmaturia.

IX. LOSTALOT.—Male, four years and six months old. No operation. The patient died from infection.

X. D'ARCY POWER.—Male, a child. No operation. The patient died.

XI. DETTRICH.—Male, one year and nine months old. No operation. Death.

XII. ALBARRAN.—Female, a child. No operation. Death.

XIII. ALBARRAN.—Female, four and one-half years old. No operation. Death.

XIV. FROLICH.—Female, four years old. Not having access to the original paper, I am not able to complete the report.

XV. LOHR.—Female, three and one-half years old. Operated, but died.

XVI. STEINMETZ.—Male, two years and nine months old. There was

no operation. The patient died about two months after entering the hospital. The post-mortem report of this case is quite complete.

XVII. McCONNEL.—Male, nine months old. The true condition of this case was found at postmortem. No operation.

BIBLIOGRAPHY.

- Albarran. Tumors of the Bladder, 1892, pages 447, 449.
 Butlin. London Lancet, 1882.
 Chaffey. Transactions of the Pathological Society of London, 1885.
 Chiari. Prag med. Wochenschrift, 1886.
 D'Arcy Power. Transactions of the Pathological Society of London, 1888.
 Dettrich. Prag med. Wochenschrift, 1889.
 Fenwick. Transactions of the Pathological Society of London, 1886.
 Frolich. Thesis. Greifswald, 1893.
 Guersant. Tumors of the Bladder, Albarran, 1868.
 Gussenbauer. Archives für klin. Chirurgie, 1875.
 Lohr. Berlin klin. Wochenschrift, 1896.
 Lostalot. Revue des mal. l'enf., 1888, vol. vi.
 McConnel. Proceedings of the Pathological Society, Philadelphia, 1904.
 Morgan. Medical Times and Gazette, London, 1885.
 Seiwert. Dissertation, Greifswald, 1881.
 Steinmetz. Deutsche Zeitschrift für Chirurgie, Leipzig, 1894.
 Vanderveer. Cyclopædia of the Diseases of Children, Keating, 1890.